

Testimony of Mark V. Rosenker, Chairman
National Transportation Safety Board
Before the
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Committee on Transportation and Infrastructure
Subcommittee on Highways and Transit
Motorcoach Safety
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Good morning Chairman DeFazio, Ranking Member Duncan and Members of the Subcommittee. My name is Mark Rosenker, Chairman of the National Transportation Safety Board. Mr. Chairman, I would like to take this opportunity to thank you and the Members of the Subcommittee and staff for inviting the Safety Board to testify today on the topic of Motorcoach Safety and for your continued interest in furthering the safety of our Nation's highways.

As you know, the Safety Board is charged with investigating highway accidents, determining their probable or root cause, and making recommendations to prevent similar accidents from happening again. Changes in highway or vehicle design, driver training, occupant protection, and regulatory oversight are frequently recommended. In 2006, the Safety Board did important work regarding automatic slack adjusters on large trucks, highway median barriers, toll plaza designs, collision warning systems, vehicle incompatibility, highway construction oversight, and cell phone use by bus drivers.

But today, the topic is motorcoach safety. Intercity motorcoach travel is one of the safest modes of transportation, with fewer than 17 fatalities on the motorcoach in an average year. It is also one of the most popular forms of travel, transporting more passengers than either commercial air or rail travel, according to industry estimates. However, according to the National Highway Traffic Safety Administration's (NHTSA's) FARS database, 33 persons riding in motorcoaches received fatal injuries during 2005. This is the highest number of on-board fatalities in at least the last 15 years. Unfortunately, one of the accidents I would like to speak about today made the largest contribution to that number.

Let me just touch on a few of the recent issues that the Safety Board has addressed in its accident investigations concerning motorcoach safety. Those issues include:

- Motorcoach Crashworthiness;
- Motorcoach Fires;
- Motorcoach Maintenance and Oversight by the FMCSA; and
- Cell Phone Use by Bus Drivers.

Motorcoach Crashworthiness

Even though intercity motorcoach operations are one of the safest modes of transportation, the Safety Board has long been concerned about the safety of those who ride in

motorcoaches. Quite frankly, people have a right to expect the highest level of safety when they pay for a ticket and place their safety in the hands of a motorcoach operator. One of the reasons motorcoach operations are so safe is because they usually provide a reasonable level of occupant protection when accidents occur. Unfortunately, the occupant protection provided in motorcoaches does not work well in all accident scenarios.

For example, just last week, our investigators were at the scene of a motorcoach accident in Atlanta that involved a baseball team from Buffton University in Ohio. The motorcoach took an exit ramp from the left lane, failed to stop at the end of the exit ramp, collided with and overrode a concrete bridge rail, and fell 30 feet to the highway below.

Although this accident occurred only 18 days ago, we know from past experience that one of the major issues is likely to be the crashworthiness of the motorcoach. In this accident, 7 people died, including 5 students, the bus driver and his wife. But perhaps more importantly, some of the occupants were ejected or partially ejected from the vehicle. We know from past investigations that keeping occupants within the vehicle is paramount to their protection. In addition, the vehicle itself must be strong enough to prevent intrusion into the occupant compartment. Finally, the seats, side panels, and other surfaces need to absorb energy when impacted by occupants in the crash scenario. When all of these concepts work together, it greatly increases the occupants' chance of survival.

As you know, motorcoaches use a form of passive occupant protection called "compartmentalization." One of the advantages of compartmentalization is that it requires no action on the part of the occupant to implement. Current passive safety features on automobiles include airbags and energy-absorbing materials on interior surfaces. For example, on school buses, compartmentalization provides a protective envelope consisting of strong, closely spaced seats, which have high, energy-absorbing seat backs--not unlike an egg crate. In concept, motorcoaches incorporate a form of compartmentalization, but it is less rigorous and less regulated than that of school busses.

In 1999, the Safety Board published 2 special investigation reports on the crashworthiness of motorcoaches. Those reports were the "Bus Crashworthiness Issues," in which we examined 6 schoolbus accidents and 40 bus accidents, and "Selective Motorcoach Issues," in which we examined 2 motorcoach accidents in detail.

What we found in these studies is that one of the primary causes of preventable injury in motorcoach accidents occurs when the occupant is thrown out of the seat during a collision. The overall injury risk to occupants can be significantly reduced by retaining the occupant in the seating compartment throughout the collision. In addition, we found that equipping motorcoach side windows with advanced glazing may decrease the number of ejections of unrestrained passengers and decrease the risk of serious injuries to restrained passengers during motorcoach accidents. Finally, we found that the strength and height needed to open an emergency window when a motorcoach is not upright poses a problem for some passengers, especially children, senior citizens, and some injury victims.

As a result of these findings, the Board made 6 recommendations to improve motorcoach occupant protection in 3 primary areas:

- Improved occupant protection systems to provide greater protection for side impact and rollovers and windows that prevent occupant ejection.
- Easy-to-open window and roof emergency exits that stay open; and
- Stronger bus roofs.

We asked NHTSA to develop and implement performance standards for motorcoach occupant protection systems that account for frontal, side, and rear impact collisions and rollovers. We also asked NHTSA to revise window-glazing requirements to prevent occupant ejection.

In addition, we asked NHTSA to revise the Federal Motor Vehicle Safety Standard 217 on “Bus Window Retention and Release,” to require that emergency window exits be easily opened and that they remain open during an emergency evacuation when a motorcoach is upright or at unusual attitudes.

Finally, we would like to see requirements for motorcoach roof strength that provide maximum survival space for all seating positions and that take into account current typical motorcoach window dimensions.

In summary, surviving an accident depends on many factors. The structural integrity of the vehicle and passenger compartments, seat design, and restraint systems can all increase a person’s likelihood of surviving a crash.

Motorcoach Fires

The next motorcoach safety issue I would like to discuss is motorcoach fires.

On September 23, 2005, a fire engulfed a motorcoach carrying elderly evacuees away from the predicted path of Hurricane Rita near Dallas, Texas. The 44 passengers were from an assisted-living facility in Bellaire, Texas; many needed to be carried or assisted onto the motorcoach by firefighters or nursing staff, and required almost 2 hours to board. Twenty-three elderly passengers were unable to escape the blaze and perished.

The following safety issues related to the fire were identified in this investigation:

- Emergency egress from motorcoaches;
- Fire resistance of motorcoach materials and designs;
- Transportation of partially pressurized aluminum cylinders; and
- Vehicle fire reporting and inconsistent data within Federal accident databases.

Fires on motorcoaches are not an unusual occurrence. In fact, some industry experts estimate that there is close to one motorcoach fire per day. However, to date, injuries and fatalities related to motorcoach fires are an extremely rare event. Still, the motorcoach fire we

investigated near Dallas shows the potential for catastrophe when passengers are unable to exit a burning motorcoach quickly.

Also, I want to make it clear that this accident involved very unusual circumstances, and many of the decisions to evacuate and the means to evacuate were made in the context of Hurricane Katrina, which occurred just over a month before this accident.

Here is what the Board found:

- The fire originated due to an overheated right-side tag axle wheel bearing assembly, which lacked sufficient lubrication. This overheated wheel assembly ignited the tire, spread up the side of the motorcoach, burnt through the fiberglass sidewall above the wheel well, and through the motorcoach windows, creating an entry path for the smoke and fire into the passenger compartment.
- Contributing to the rapid propagation and severity of the fire and subsequent loss of life, was the lack of motorcoach fire-retardant construction materials adjacent to the wheel well. The sidewalls of this motorcoach were made of fiberglass, and fire-hardening materials in this area are not required by regulation. The lack of fire-hardened materials reduces the time available for safe egress in the event of a fire.
- Also contributing to the severity of the accident was the limited ability of passengers with special needs to evacuate the motorcoach. The quick-spreading fire and thick smoke prevented nursing staff, bystanders, and rescuers from extricating most of the passengers with special needs from the accident motorcoach.
- For more than 30 years, the Safety Board has addressed the issue of motorcoach emergency evacuations. There is still no requirement for motorcoaches to demonstrate their emergency evacuation capabilities or meet any emergency evacuation parameters.
- Contributing to the acceleration of the fire was the proximity of the fuel lines to the tire wheel well, where the fire originated, and the combustible access panels which covered them.
- Although news media and film footage of the fire made it appear that there were explosions that may have contributed to the fatalities, the fireballs that occurred were the result of failed aluminum cylinders that were partially filled with oxygen. The oxygen cylinders were for the passengers' medical needs. However, these failures occurred after the smoke and heat of the fire made any further rescue attempt impossible.
- Because partially pressurized aluminum cylinders can fail when exposed to heat and fire, as occurred on the accident motorcoach, they still pose a potential danger to the general public and emergency responders.
- The Board also found that because tire fires are difficult to extinguish, early detection of potentially hazardous conditions in a wheel well area is critical.

- Finally the Board concluded that continuing analysis of motorcoach and bus fire data is vital to understanding not only the trends in vehicle fires, but also the success or shortcomings of measures taken by the Government and private industry to address this problem.

As a result of its investigation, the NTSB made the following recommendations:

- We asked NHTSA to develop a standard to provide enhanced fire protection of the fuel systems in areas of the motorcoaches and buses where the system may be exposed to the effects of a fire. In addition we asked that fire-hardened materials be used in areas, such as those around wheel wells, to limit the potential for flame spread into motorcoach or bus passenger compartments. In the interim, while standards are being developed, we asked the motorcoach manufacturers to use currently available materials and designs for fuel system components that are known to provide fire protection for the system.
- Since wheel well fires are so difficult to extinguish, we asked that NHTSA develop detection systems to monitor the temperature of wheel well compartments in motorcoaches and buses to provide early warning of malfunctions that could lead to fires so that passengers might have time to escape.
- We also asked that NHTSA continue to gather and evaluate information on the causes, frequency, and severity of bus and motorcoach fires, and conduct ongoing analysis of the fire data to measure the effectiveness of the fire prevention and mitigation techniques identified and instituted as a result of the Volpe National Transportation Systems Center fire safety analysis study.
- Finally, the Safety Board believes that NHTSA should evaluate current emergency evacuation designs of motorcoaches and buses by conducting simulation studies and evacuation drills that take into account, at a minimum, acceptable egress times for various postaccident environments, including fire and smoke; unavailable exit situations; and the current above-ground height and design of window exits to be used in emergencies by all potential vehicle occupants.

Motorcoach Maintenance and Oversight by FMCSA

The next motorcoach safety issue I would like to discuss is oversight of the motorcoach industry by the Federal Motor Carrier Safety Administration.

As discussed previously, the Safety Board determined that the cause of a fatal bus fire near Dallas, Texas, was insufficient lubrication in the right-side tag axle wheel bearing assembly of the motorcoach, which resulted in increased temperatures and subsequent failed wheel bearings. The high temperatures resulting from the friction led to the ignition of the tire and a catastrophic fire. This occurred because the motorcoach operator, Global Limo, Inc., failed to detect this lack of lubrication and FMCSA failed to provide proper oversight of the motor carrier through its compliance review process.

Here is what the Board found:

- The accident motorcoach was mechanically unsafe because the right-side tag axle wheel bearing assembly lacked sufficient lubrication, which resulted in high frictional forces and high temperatures, causing the wheel bearings to fail, overheat, and ignite the tire.
- Because neither Global nor its employees routinely inspected the hub oil level or undercarriage of the wheel well, they did not discover the lack of lubrication of the tag axle wheel bearings. This disregard for vehicle maintenance, pre-trip inspections, and post-trip driver vehicle inspection reports led to a wheel bearing failure that resulted in a catastrophic fire and loss of life.
- Global Limo Inc. violated several Federal safety regulations pertaining to its drivers and vehicles, thereby exhibiting a lack of concern for safety management controls. For example, with reference to driver violations, Global did not ensure that its drivers were properly licensed to drive a motorcoach in the United States and failed to conduct the required postaccident alcohol and illicit drug testing. With reference to vehicle violations, Global operated a passenger-carrying commercial vehicle, which had an expired temporary trip tag, was not registered in the United States, displayed the license plate from another vehicle, and had not been systematically or adequately maintained. These violations especially concern the Safety Board because we have repeatedly made recommendations to FMCSA to place greater emphasis on driver and vehicle violations in its compliance review process.
- Federal regulations and inspection criteria do not require inspection of wheel bearings to ensure adequate lubrication and thereby prevent wheel bearing failure and resulting wheel well fires.
- Most motorcoach maintenance manuals do not provide a specific warning of the danger of inadequate wheel bearing lubrication and the potentially serious consequences of wheel bearing failures.
- Although FMCSA collects data on numerous safety violations when it conducts compliance reviews of motor carriers, ironically, approximately 85% of those violations are not included in the calculations of the motor carriers' rating. By not recognizing these violations in its calculations, FMCSA is allowing potentially unsafe carriers to continue to operate, without consequence.
- Finally, as we have done in several accident investigations over the past 8 years, the Safety Board again concluded that the current FMCSA compliance review process does not effectively identify unsafe motor carriers and prevent them from operating, especially when violations are found in the areas of driver and vehicle safety.

Unfortunately, FMCSA is only able to conduct compliance reviews for a small fraction of the almost 911,000 motor carriers in this country. However, in this particular accident,

numerous driver and vehicle safety violations were uncovered in a review performed by the Texas Department of Public Safety (DPS) in April 2002. But at the time, the Texas DPS had no authority to force Global to cease operations. In February 2004, FMCSA conducted a compliance review of Global in which it found similar violations pertaining to drivers and vehicles. Nonetheless, FMCSA rated Global as “satisfactory.” Finally, 19 months later, after the bus fire near Dallas, FMCSA went back to Global and conducted another compliance review in September 2005. In this review, FMCSA found many of the same violations as in its previous compliance review; however, this time FMCSA gave Global a safety rating of “unsatisfactory” and declared that Global’s operations created an “imminent hazard” to public safety. FMCSA issued an order for Global to cease operations.

Concerned that motor carriers with significant regulatory violations for drivers and vehicles are still receiving satisfactory ratings, the Safety Board once more focused on Federal standards for determining the safety fitness of carriers. As a result, the Board made the following recommendations:

- The Safety Board asked FMCSA to revise the Federal Motor Carrier Safety Regulations to prohibit a commercial vehicle from operating with wheel seal or other hub lubrication leaks.
- To protect the traveling public until FMCSA completes and implements its Comprehensive Safety Analysis 2010 Initiative, the Board asked FMCSA to issue an Interim Rule to include all Federal Motor Carrier Safety Regulations in the current compliance review process so that all violations of regulations are reflected in the calculation of a carrier’s final rating.
- The Board asked that motorcoach maintenance manuals be revised to emphasize the importance of wheel bearing lubrication. These manuals need specific warnings that daily inspection of hub oil levels and wheel seals is vital to preventing wheel bearing failure and that bypassing this requirement is a dangerous practice that can lead to a wheel fire or other serious consequences.
- Finally, the Board reiterated its long-standing recommendation to FMCSA to change the safety fitness rating methodology so that adverse vehicle or driver performance-based data alone are sufficient to result in an overall unsatisfactory rating for a carrier.

Cell Phone Use by Bus Drivers

Finally, I would like to discuss the issue of cell phone use by bus drivers.

On November 14, 2004, during daylight hours, a 44-year-old bus driver was operating a motorcoach in the southbound right lane of the George Washington Memorial Parkway in Alexandria, Virginia, taking 27 high school students and a chaperone to Mount Vernon. This vehicle was the second one of a two-bus team. The motor carrier, Eyre Bus Service, Inc., operates this route frequently, and the accident bus driver had driven this route on one previous occasion 9 days earlier.

The motorcoach was traveling approximately 46 miles per hour as it approached the stone arched Alexandria Avenue overpass bridge, which passes over the GW Parkway. The bus driver passed warning signs indicating that the right lane had only a 10-foot, 2-inch clearance, while the center lane had a 13-foot 4-inch clearance. The bus was 12 feet tall. The lead bus moved into the center lane, but the accident bus driver remained in the right lane and drove the bus into the underside of the bridge. Witnesses and the bus driver reported he was talking on a hands-free cellular telephone at the time of the accident.

Of the 27 student passengers, 10 received minor injuries and 1 sustained serious injuries. The bus driver and chaperone were uninjured. The bus's roof was destroyed.

The Safety Board determined that the probable cause of this accident was the bus driver's failure to notice and respond to posted low-clearance warning signs and to the bridge itself due to cognitive distraction resulting from conversing on a hands-free cellular telephone while driving. Contributing to the accident was the low vertical clearance of the bridge, which does not meet current National Park Service road standards or American Association of State Highway and Transportation Officials guidelines.

As a result of this accident, the Safety Board made the following recommendations:

- The Board asked FMCSA to publish regulations prohibiting cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies.
- The Board also asked the 50 States and the District of Columbia to enact legislation to accomplish the same result at the State level.
- Additionally, the Board asked the motorcoach associations, school bus organizations, and unions to develop formal policies prohibiting cellular telephone use by commercial driver's license holders with a passenger-carrying or school bus endorsement, while driving under the authority of that endorsement, except in emergencies.

Finally, the Safety Board also reiterated a previously issued Safety Recommendation to 20 States to modify their traffic accident investigation forms to include driver distraction codes, including codes for interactive wireless communication device use.

Mr. Chairman, I know you share my desire to improve motorcoach safety and I hope this information will assist you in accomplishing that goal. This completes my statement, and I will be happy to respond to any questions you may have.